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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/805,664

03/18/2004

Satoshi Ogawa

04177/LH

2113

1933 7590 12/29/2006

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EXAMINER

PIPALA, EDWARD J

ART UNIT

PAPER NUMBER

3663

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

12/29/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/805,664 | OGAWA ET AL. | |
| | Examiner | Art Unit | |
| | Edward Pipala | 3663 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 06 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action is in response to Applicant's amendment and remarks dated 10/6/06.

Claims 1 and 2 have been amended.

Claims 3-11 have been canceled.

New claims 12-17 have been added

The previous rejection under 35 U.S.C. 103 is withdrawn in view of Applicant's amendments and remarks.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagin et al. (4,762,191) in view of Kodama et al. (6,390,215).

Hagin et al. discloses an articulated vehicle selectively driven at two axles by two power sources, in particular an articulated omnibus having a hybrid drive system comprising an internal combustion engine and an electric motor whose power is transmitted not only to an axle driven by the IC engine but additionally to a further drive axle in order to extend the life of the transmission axles (as shown in figure 1 and on the

front of the patent). In column 1, lines 32-52, Hagin et al. discloses that a particular advantage to this type of hybrid vehicle is that the motor may be used as a generator for braking the vehicle and thereby recharging the vehicle's batteries through regenerative braking, and that use of the electric motor is particularly appropriate for example when starting from rest in hilly city terrain. In column 2, line 55 through col. 3, l. 59, Hagin et al. additionally teaches that a second (further) axle of the vehicle is adapted for use as a drive axle and also has a transmission and an electric motor connected therewith, and that this second drive axle may have driving means identical with that of the first already present drive axle so that parts are readily interchangeable. Column 3, lines 11-21 further teach that there are a large number of different possible forms (combinations) of the hybrid vehicle, including one in which an electric motor is joined to each of the drive axles, where col. 4, ll. 47-52 disclose a possible design in which the hybrid vehicle is in the form of an articulated pusher omnibus in which the drive unit at the rear segment is in the form of an IC engine, transmission and axle. Column 5, lines 9-19 further disclose the use of an electric motor on the drive axle of the front carriage, as part of an articulated omnibus. However, Hagin et al., does not disclose the use of a detachably connected power supply section that moves together with the driving vehicle and supplies power to the driving motor.

Kodama et al. discloses an electric vehicle having a main battery mounted on the vehicle body, and a sub-battery detachable connected to the vehicle body for use when traveling longer distances (a high load). In col. 1, line 45 through col. 2, line 57,

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Kodama et al., first teaches that the sub-battery can be readily coupled to the vehicle body (as previously noted), and secondly (col. 2, ll. 39) that the sub-battery is charged by regenerative power (i.e., that it comprises an accumulator for accumulating regenerated electric energy).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the teachings of Kodama et al. as part of the hybrid drive system of Hagin et al., either by implementing the teachings of Kodama et al. as part of the rearward portion of the articulated omnibus Hagin et al., or by simply attaching a battery containing trailer to the back of such an omnibus, for the purpose of providing additional electrical energy during high load situations and storing accumulated electrical energy generated during regenerative braking as taught by both.

3. Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagin et al. and Kodama et al., as applied to claims 1 and 2 above, further in view of Bidwell (US 2002/0038730).

The combination of Hagin et al. and Kodama et al. taught above provides for a traveling system comprising a driving vehicle driven by a driving unit, a driving motor mounted on the driving vehicle and a power supply vehicle that moves together with the driving vehicle and supplies power to the driving motor and is detachably connected to the driving vehicle. The above combination does not provide for the supply vehicle

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having a second motor and being self driven (in the case of the above combination where the teaching of Kodama et al., is not being implemented as part of the trailing portion of an omnibus).

Bidwell discloses a trailer which carries a battery pack and is powered by an electric motor, for use on steep loads or when more power is required. Also taught in section 0008 is the use of a quick disconnect feature, where section 0045 additionally teaches the use of regenerative braking for recharging the batteries.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of Bidwell, within the context of the above combination of Hagin et al. and Kodama et al., so as to provide a motor as taught by Bidwell in order to provide additional motive power or electrical energy during times of high load requirements.

Response to Arguments

4. Applicant's arguments with respect to claims 1, 2 and 12-17 have been considered but are moot in view of the new ground(s) of rejection.

Applicant has amended independent claim 1 to now include that a driving engine drives at least one rear wheel, and that a driving motor drives at least one front wheel.

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The new rejection of claims 1, 2, 12 and 13 is now base on Hagin et al. and Kodama et al., where Hagin et al. discloses an omnibus type articulated hybrid vehicle where there is a front and rear axle/motor/engine arrangement for each of a front and rear set of driving wheels of the vehicle.

New claims 14-17 recite a power supply vehicle that moves with the driving vehicle, and which is self-driven by a second motor. For this reason Bidwell is combined with the above noted prior art references to show that it is known in the art to have an attachable power supply vehicle which is also self powered. This teaching can be used as a teaching so as to support such an implementation within the context of Kodama et al. and Hagin et al.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Pipala whose telephone number is 571-272-1360. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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